



Topic 1: Falling Ball Analysis

Name: _____

Investigative Question

How does the position of a falling object change with time?

Pre-lab Information

Strobe photo analysis uses long exposure photography to examine the motion of objects. An object in motion is photographed in a dark room that is periodically illuminated by a strobe light. One photo is taken with a long exposure. Each time the strobe flashes, the object in motion is illuminated and its position recorded on film. If the frequency of the strobe flash is known, the actual time interval between images can be determined.

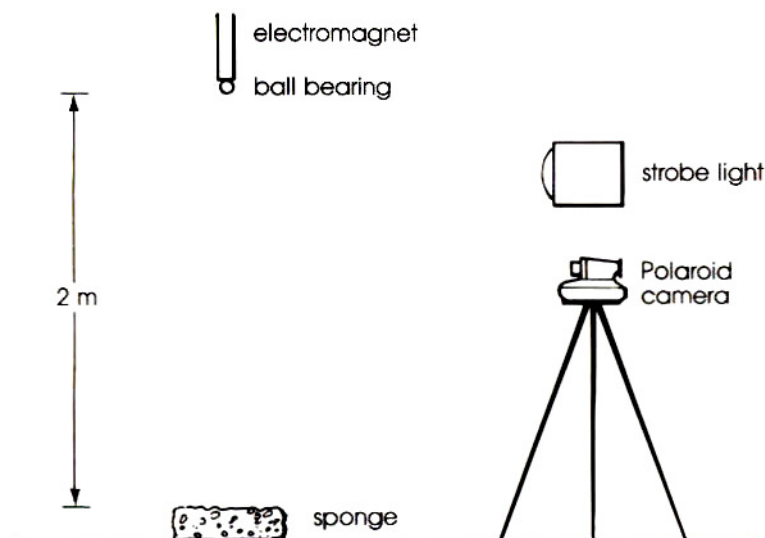
Required Apparatus

- 30 cm plastic ruler
- Strobe photograph

Hazards and Required Safety Equipment

- None

Procedure and Data Collection



Note the experimental set up diagram. When the electromagnet releases the ball bearing, the camera shutter opens and the photo exposure begins. Regular strobe flashes illuminate the falling ball bearing and record its position on film.

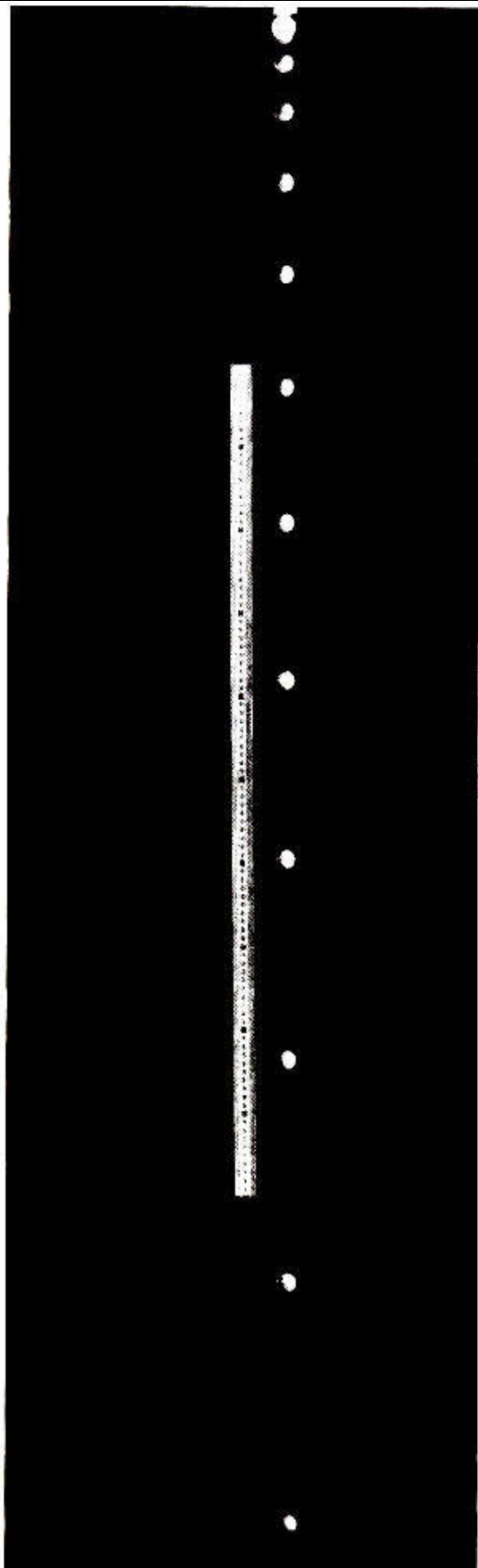
1. Analyze the photo provided. Record measurements of position from the starting point for each successive image.
2. Use the image of the meter stick on the photo to convert the measurements to actual distances.
3. Plot a suitable graph(s) to determine the mathematical relationship between the two variables.

Reminder:

All measurements must be accompanied by a reasonable uncertainty. In some cases, a written justification of the chosen uncertainty is very suitable and should be included.



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A strobe photograph of a falling ball bearing. The time between flashes is 0.0595 s. A metre stick is included to show the scale of the photograph.